Deber 9Q

Física para ing 1Q

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1) $2,0t = n_A \pi$

$t_A = \frac{1}{2} \pi_A n, \quad n_A = 1, 2, 3$

$t_A = \frac{\pi}{2}, \pi, \frac{3}{2}\pi, 2\pi$

$t_A = \pi s, 2\pi s, 3\pi s$

2) $f = \frac{1}{2\pi}\sqrt{\frac{k}{m}}$

$k = 4\pi^2 m f^2$

$k = 4\pi^2 (0,05)(3)^2$

$k = 19,6 \ N/m$

3) $\theta(t = 3,5) = 13 \cos\left(\sqrt{\frac{g}{0,3}}(3,5)\right)$

$= 8,4$

4) Ciclos que hace el reloj $= 24 \times 60 \times 60/2) = 43200$

Ciclos que hace en un día $= 43213$

$T = \frac{43213}{43200}$

$2\pi\sqrt{\frac{1}{g}} \Rightarrow 1,0003$

5) $T = 2\pi\sqrt{\frac{I}{mgh}}$

$T = 2\pi\sqrt{\frac{\frac{1}{12}m\ell^2 + mh^2}{mgh}} \Rightarrow h = \sqrt{\frac{1}{12}\ell} \Rightarrow 0,25m$

$T = \frac{2\pi}{\sqrt{g}}\sqrt{\left(\frac{1}{12}\frac{\ell^2}{h} + h\right)} \Rightarrow 1,53s$

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6) $E = \frac{1}{2} K A^2$

$E = \frac{1}{2} (89,27) (0,045)^2$

$E = 0,086\ J$

7) $m v_0 = (m+M) V$

$V_{max} = \frac{m}{m+M} v_0$

$\frac{1}{2}(m+M)V^2 = \frac{1}{2}(m+M)\left(\frac{m}{m+M}\right)^2 = \frac{1}{2} k A^2$

$v_0 = \frac{A}{m}\sqrt{K(m+M)}$

8) $W = \frac{1}{2} K A^2$

$K = \frac{2W}{A^2}$

$K = \frac{2(3,6)}{0,13^2}$

$K = 426,03\ N/m$

9) $V = \sqrt{\frac{0,5(250)\,0,24^2}{0,5\,(0,0125+0,24}}$

$V = 11,21\ m/s$

10) $\frac{1}{2} k x^2 = \frac{1}{2} m v^2$

$x = \sqrt{\frac{K}{m}}$

$V = 0,175\sqrt{\frac{K}{m}}$

$V = 10,2\ m/s$

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